

**WALLER
TODD &
SADLER**
ARCHITECTS

STRUCTURAL EVALUATION REPORT PHASE II

**SUFFOLK CITY HALL
SUFFOLK, VIRGINIA**

WTS PROJECT NO. 0706-F

**FINAL ROUGH DRAFT
30 APRIL 2010**

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Executive Summary

EXECUTIVE SUMMARY

Beginning in March 2010, a phased study of the Suffolk Municipal Center was undertaken by a team of architects and engineers to evaluate the condition of the Suffolk City Hall and Old Police Headquarters Building. In cooperation with Gerry Jones with the Department of Public Works, the study team reviewed existing drawings of the buildings and performed investigative field work including some destructive investigation of the exterior wall conditions. This report documents those findings and provides conclusions and recommendations for proposed renovations with associated costs.

STUDY TEAM

- Architecture: **Waller, Todd and Sadler Architects, Inc.**
- Structural Engineering: **McPherson Design Group, P.C.**

STUDY OBJECTIVES

- Provide general structural evaluation of the building superstructure, including foundation and slab on grade (part of Phase I that has been incorporated into this report).
- Evaluate building supporting elements and lateral force resisting system.
- Evaluate the building envelope systems (doors, insulation, miscellaneous penetrations, total veneer).
- Evaluate steel/brick headers and lintels.
- Evaluate brick veneer connections to existing CMU back up.
- Evaluate limestone veneer conditions.
- Evaluate window replacement and the effect of replacement on exterior veneer and interior finishes.
- Evaluate veneer joint and expansion joints in exterior veneer walls.
- Evaluate limestone copings and metal coping caps relative to current condition and relative to removal/replacement of same if brick veneer requires replacement.
- Evaluate removal/replacement of raised masonry flower beds.
- Investigate rooms on first floor including stairwells relative to cracking and displacement caused by slab settlement. Investigation includes identifying areas needing corrective measures for aesthetic reasons and to ensure doors are operational.
- Investigate on first floor separations between exterior wall systems and interior wall systems due to movement of one or both wall systems.
- During the evaluation of the building, identify any additional corrective or finish work that may be required due to structural factors.
- Provide cost estimates for three renovation plans that would extend the use of the building for 5, 10 and 25 years respectively.

FACILITY HISTORY AND BACKGROUND INFORMATION

1. The Suffolk Municipal Center was constructed in the early 1960's, consisting of a Police Building and a City Hall Building. Phase One of the project was the Police Building, a one story, masonry structure. Its roof structure is constructed of metal deck on steel joists supported by CMU bearing walls at the exterior and beams and columns at the interior. The interior CMU walls are partition walls that extend a few inches above the suspended hard ceiling. According to the original construction drawings these partition walls are supported directly on the slab on grade. Phase Two was the construction of the City Hall building directly attached to the Police building. The City Hall piece was constructed as a two-story structure with a one story wing on the east end of the building. Its roof structure is constructed of metal deck on steel joists supported by CMU bearing walls at the exterior and beams and columns at the interior. A second floor concrete slab is also supported on steel joists, beams and masonry bearing walls. All of the columns and bearing walls are supported on spread footings that bear original grade, which is below existing finished grade. Most of the interior CMU walls are partition walls that extend above the ceiling and do not carry any load other than their own self-weight. According to the original construction drawings these partition walls are supported directly on the slab-on-grade.
2. Around 1975, a second floor was built over the original one story portion of the City Hall Building and a two story addition was added on the east end of that building.
3. In the mid-90's the City Hall Building received interior and exterior renovations. Large portions of the first and second floor were reconfigured and renovated with new finishes. CMU partitions were removed and replaced with metal stud partitions or open offices with systems furniture. Portions of the exterior brick veneer that had cracks were repointed, but not the entire building facade. Around the same time frame, a small one story masonry addition was built onto the existing Police Headquarters Building to house a new 911 call center and some of the interior spaces were renovated.
4. In 2004, some significant movement was observed near the main entrance to the former Police Headquarters. Approximately two inches of vertical movement was noted in the slab on grade, causing significant cracks in the floor and adjacent interior CMU walls, rendering some doors inoperable. The terrazzo floor was sloping in the corridor so severely that it could be seen and felt when walking on it. The offices in this area were evacuated as a precaution until repairs were made.
5. In 2004, McPherson Design Group performed a structural assessment of the former Police Headquarters Building to evaluate the settlement of the slabs-on-grade and the deteriorated condition of the exterior brick. It was determined that the cracks in the floors and interior CMU walls were caused by settlement of the fill in several locations that supported the slab-on-grade. The voids that formed under the slab created stresses, eventually causing the slab to crack. During this evaluation, similar slab settlement issues were observed in the City Hall Building, but not specifically addressed in the report. The exterior walls of the Police Building were evaluated also and it was determined that the cause of severe cracking and popping mortar in the brick veneer was due to moisture infiltration in the wall from years of open joints in the limestone coping, a lack of control joints and no weeps present in the masonry wall. The excessive moisture caused the joint reinforcing and steel lintels to corrode, ultimately causing the brick problems. No repairs to the exterior brick veneer were made at this time.
6. In 2005, the voids under the slabs of the Police Headquarters were pressure grouted in an attempt to stabilize the slabs. This repair work did not solve the slab problem because it was observed that settlement began to reoccur in the Police Headquarters during 2007.

Note: Three buildings were designed by the same architect in the mid 1960's: the Police Headquarters Building, City Hall and the downtown Suffolk Fire Station. The Fire Station has displayed similar problems as the Police and Municipal buildings. In 2004, McPherson Design Group performed an evaluation of the Fire Station. There were similar problems with the slabs on grade; however the major concern was the brick veneer. The brick was pulling away from the building at the window heads and several lintels were in very poor condition. In 2005, repairs were made to the Suffolk Fire Station. The brick veneer was re-anchored to the wall using externally applied anchor pins and several lintels were replaced.

MAJOR STRUCTURAL DEFICIENCIES

City Hall

McPherson Design Group was engaged by the Waller Todd & Sadler Architects to perform a field investigation and structural assessment of the City Hall building in downtown Suffolk. The primary purpose of the investigation was to evaluate settlement issues in various locations around the building and determine the extent of the voids under the existing slab-on-grade. In order to best estimate the extent of the voids and determine the existing soil conditions, the services of GET Solutions, Inc. were retained to employ ground-penetrating radar to map accessible portions of the first floor to locate voids. The slab was cored in eight locations where voids were suspected and dynamic cone penetration tests were performed. The geotechnical report including test results is included in **Appendix A** at the end of this report.

Extensive cracking has been observed in many of the interior partition CMU walls. The cracks are most obvious at those walls perpendicular to the exterior of the building. The cracks are a result of ongoing movement because several cracks have opened up after being repaired or painted over in recent years. There was evidence of settlement throughout the building where there are noticeable dips in the slab-on-grade.

Based on field observations, and the geotechnical analysis, it has been determined that the cracks in the CMU partition walls and the dips in the floor were caused by differential settlement of the fill material underneath the slab-on-grade. Voids were discovered under the slab-on-grade in several locations throughout the building, as illustrated in **Appendix B** at the end of this report.

The slab-on-grade is constructed so that the exterior edge is supported on the perimeter foundation wall. This does not allow the slab to settle independently from the bearing wall structure. Based on the shallow borings recently taken, the soils used were not an optimum fill material. As the soil settles, voids are created under the slab where it is restrained. The strain in the slab gets too great and causes the slab to fail in flexure. The result is a noticeable dip in the slab. These dips lead to the CMU partition walls pulling away from the exterior walls, creating gaps at the top. This also leads to misalignment of doorframes making it difficult to open and shut doors completely.

There does not appear to be any excessive settlement on the actual bearing walls or main building support system. The damage appears to be limited to the partition walls and non-load bearing elements that are supported on the slab-on-grade.

It is very difficult to conclusively determine why the settlement was dormant and began again. A contributing factor would certainly be the changing distribution of load. As the soil settles, it creates the above-described voids, which eventually causes the slab to fail. Another possible cause is the movement of water within the soil. There is a history of spring activity in this area, which can influence the presence or absence of water in the soils below the slab. Both conditions can have an effect on soil consolidation.

MAJOR STRUCTURAL DEFICIENCIES

Old Police Building

Differential settlement has been observed throughout the Old Police Building. This settlement has caused extensive cracking in the CMU partition walls as well as dips in the slab on grade. In order to best evaluate the existing soil conditions, the services of McCallum Testing Laboratories, Inc. were retained to perform four, thirty-foot deep soil borings around the exterior of the building as well as three shallow borings in the interior of the building. Dynamic Cone Penetrometer tests were performed at each of the shallow borings to determine the bearing capacity and the quality of compaction. Soil samples were also taken at all seven borings to classify the existing soil. The boring logs and geotechnical report is included in **Appendix C.1** at the end of this report.

Extensive cracks have been observed in almost all of the interior partition CMU walls. The cracks are most obvious at those walls adjacent to the exterior of the building. The approximate locations of the cracks as well as the boring locations are illustrated on the Floor Plan on **Sketch SK-1 in Appendix C.2** at the end of this report.

Based on field observations and the soil borings, it appears that the settlement was caused by the use of uncontrolled fill and poor compaction during the original construction. Test holes drilled into the slab indicated the presence of an 8 inch deep x 8 foot wide void along the perimeter of the basement wall. The slab spanned across the void until it finally failed in bending and broke at mid span. This created the severe dip that was observed in the hall way and adjacent rooms on the northeast side of the building. This condition is illustrated on **Sketch SK-2 in Appendix C.2** at the end of this report.

Differential settlement, to a lesser degree, has occurred throughout the rest of the building. This is evidenced by cracks in the interior CMU partitions and noticeable peaks and valleys in the floor slab.

Extensive cracking has been observed in the CMU partition walls along the West side of the building. The consolidation of the fill material has created a void here as well. The slab has cracked at some distance from the wall and the slab has tilted inward. This condition is illustrated on **Sketch SK-3 in Appendix C.2** at the end of this report.

Note: The entire Structural Evaluation Report for the Old Police Building can be found in **Appendix C** at the end of this report.

MAJOR ARCHITECTURAL DEFICIENCIES

Old Police Building & City Hall – Exterior Deficiencies:

The exterior walls appear to have a serious problem with moisture infiltration and shrinkage cracking. The existing wall construction consists of un-reinforced, eight inch CMU block with a four-inch brick veneer and a $\frac{3}{4}$ " inch cavity.

The first issue is that there is no vertical reinforcing in the eight-inch CMU wall according to the original construction drawings which means that the walls do not meet current code requirements of one hundred miles per hour sustained wind speed.

The existing joint reinforcing does not allow independent movement between the brick and CMU which can lead to shrinkage and expansion cracks.

There are only a couple of vertical control joints in the exterior brick veneer. As a result there is nothing to allow the brick veneer to expand and contract laterally without cracking.

There are no weeps present anywhere on the entire brick veneer. Weeps are usually installed to allow water to escape from behind the brick. This condition has caused the lintels and the joint reinforcing to

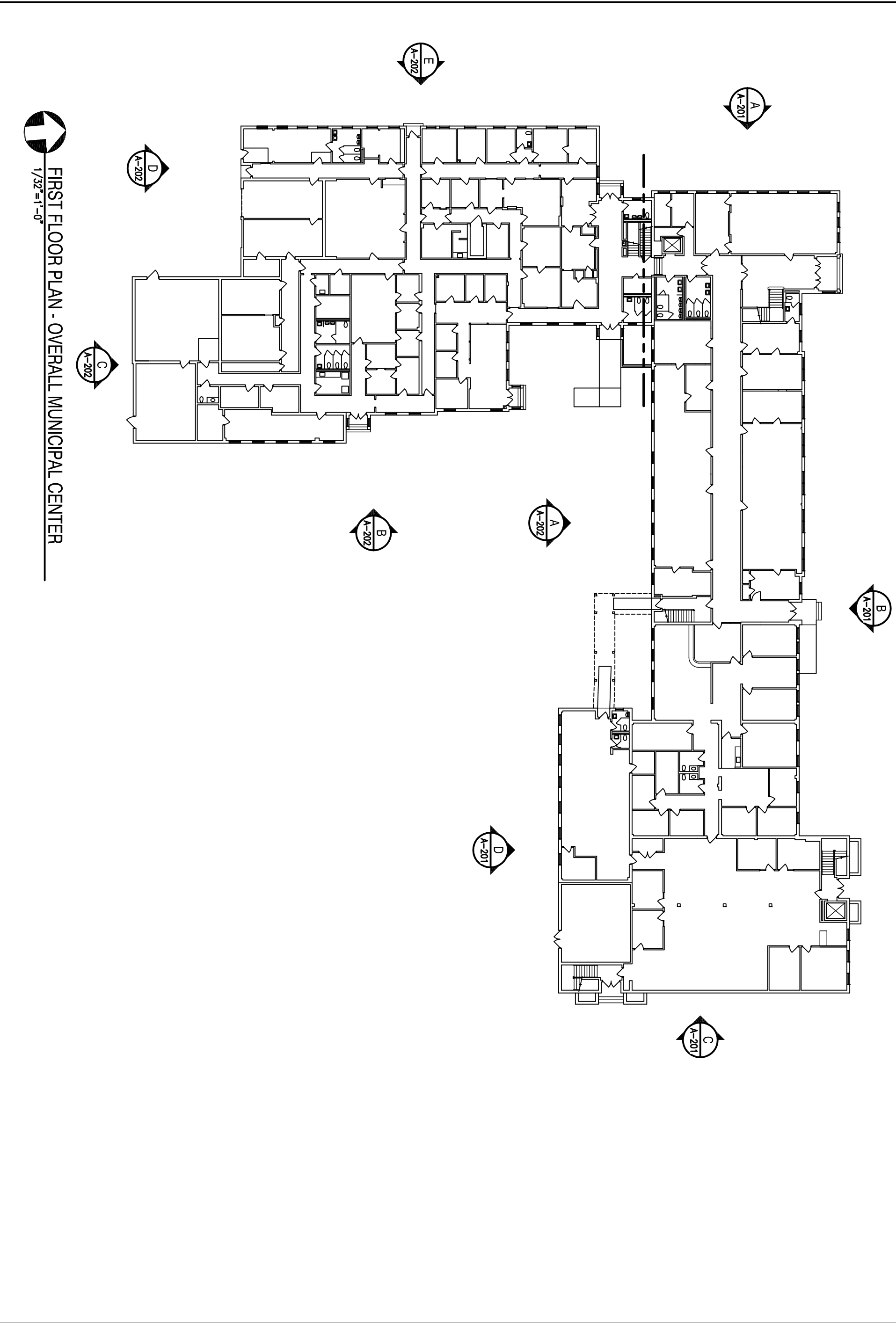
corrode. Mortar joints have “popped out” at several locations around the perimeter of the building as a result of the corrosion of the outer wire of the joint reinforcing. According to the original construction drawings, the horizontal joint reinforcing is the only element holding the exterior brick veneer to the CMU wall. Therefore, the structural integrity of the brick veneer could be severely compromised.

The limestone coping at the top of the parapet has been capped with metal flashing in recent years as part of a roof replacement. Prior to this repair the joints between the limestone pieces were open and allowed water to drain right into the wall cavity. With no weeps to allow water to escape, the interior of the brick was constantly saturated. The condition probably led to spalling of the brick and corrosion of the joint reinforcing and steel lintels.

Old Police Building & City Hall– Interior Deficiencies:

As indicated in the Structural Deficiencies section, there are many locations in both buildings where interior cracks are apparent. In several areas, doors have been rendered inoperable due to the differential settlement, and tile and terrazzo finishes have been damaged. There are some small areas of water damage in some ceiling locations and wood window jambs as well.

Damage is more readily apparent in the Old Police Building than it is in the City Hall Building due to several recent interior build-outs that have covered wall surfaces with new gypsum wall board, wood paneling, or wall paper.



SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION PHASE II, SUFFOLK, VIRGINIA	BUILDING MUNICIPAL CENTER	PROJECT NO 0706-F	DATE 04/26/2010	WALLER TODD & SADLER ARCHITECTS	 McPHERSON DESIGN GROUP p.c. STRUCTURAL ENGINEERS
		DRAWN BY MSM	SCALE AS NOTED		
		SHEET NUMBER A-101			
SHEET TITLE FIRST FLOOR PLAN - MUNICIPAL CENTER					

- SHEET KEYNOTES

1.

NEARLY 100% OF STEEL UNTELS ARE SEVERLY CORRODED. SOME UNTELS ARE BOWING AND IN FAILURE. CORRODED STEEL HAS CAUSED MORTAR JOINTS TO POP OUT UNTIL BEARING LOCATIONS, TYPICAL THIS ENTIRE ELEVATION.

2.

MORTAR JOINTS HAVE "POPPED OUT" AT HORIZONTAL MASONRY TIE LOCATIONS.

3.

LIMESTONE COPING AND BAND AT TOP OF WALLS NEEDS REPOINTING AT ALL MORTAR JOINTS, TYPICAL THIS ENTIRE ELEVATION.

4.

THE VERTICAL LIMESTONE SURROUND IS LEANING IN TOWARDS THE CENTER, THE JOINT BETWEEN BRICK AND LIMESTONE GETS WIDER TOWARDS THE TOP AND APPEARS TO BE AT LEAST 1" NEAR THE TOP.

5.

LIMESTONE PANELS, SILLS AND SURROUNDS ARE DISCOLORED AND NEED TO BE CLEANED, TYPICAL THIS ENTIRE ELEVATION.

6.

BRICK VENEER IS DISCOLORED AND EFFLORESCENCE IS TYPICAL BELOW LIMESTONE WINDOW SILLS. GENERAL CLEANING OF DISCOLORED BRICK VENEER IS NEEDED, TYPICAL FOR THIS ENTIRE ELEVATION.

7.

CRACK IN LIMESTONE WINDOW SILL.

8.

UNTEL OVER LIMESTONE SOLAR SCREENS IS CORRODED, CAUSING EXTENSIVE DAMAGE AND CRACKING TO LIMESTONE ELEMENTS.

9.

CONCRETE CEILING SLAB AT ENTRANCE CANOPIES IS SPALLING, TYPICAL MOST LOCATIONS.

10.

LADDER CRACKS IN BRICK VENEER.

11.

SPALLED LIMESTONE FACING PANEL.

12.

PLANTERS ARE SEPARATING FROM BUILDING AND EXHIBITING MOISTURE DAMAGE ON STONE.

13.

LIMESTONE VERTICALS ARE CRACKED DUE TO UNTEL DAMAGE.



A
A-201
NTS
CITY HALL BUILDING - WEST ELEVATION



B
A-201
NTS
CITY HALL BUILDING - NORTH ELEVATION



C
A-201
NTS
CITY HALL BUILDING - EAST ELEVATION



D
A-201
NTS
CITY HALL BUILDING - SOUTH ELEVATION (PARTIAL)

SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

BUILDING
CITY HALL AND
POLICE BUILDING

PROJECT NO
0706-F

DRAWN BY
MSM

SHEET NUMBER
A-201

DATE
04/26/2010

SCALE
AS NOTED

**WALLER
TODD &
SADLER**
ARCHITECTS

**McPHERSON
DESIGN
GROUP p.c.**
STRUCTURAL ENGINEERS

SHEET TITLE
PHOTO ELEVATIONS WITH OBSERVATIONS NOTED



A CITY HALL BUILDING - SOUTH ELEVATION

A-202 NTS



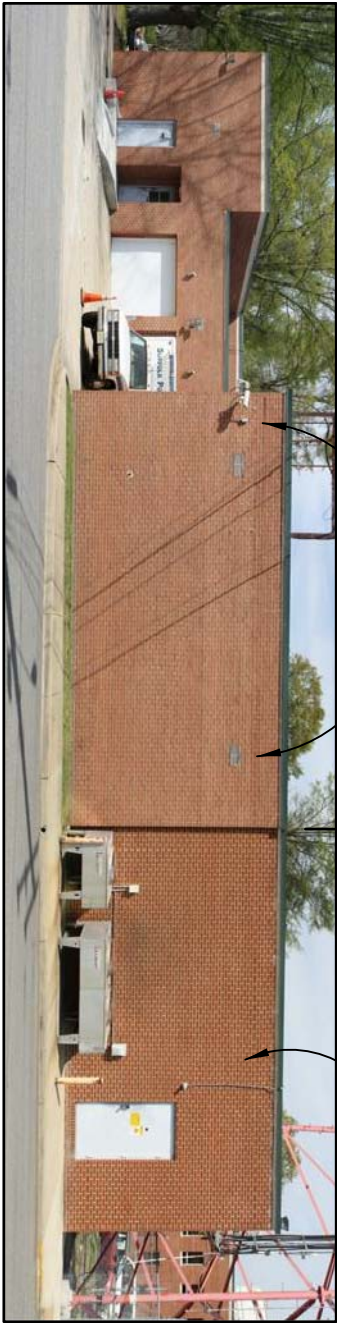
B OLD POLICE BUILDING - EAST ELEVATION

A-202 NTS



D OLD POLICE BUILDING - SOUTH ELEVATION (PARTIAL)

A-202 NTS



C OLD POLICE BUILDING - SOUTH ELEVATION (PARTIAL)

A-202 NTS



E OLD POLICE BUILDING - WEST ELEVATION

A-202 NTS

SHEET KEYNOTES

1. NEARLY 100% OF STEEL UNTELS ARE SEVERLY CORRODED. SOME UNTELS ARE BOWING AND IN FAILURE. CORRODED STEEL HAS CAUSE MORTAR JOINTS TO POP OUT UNTIL BEARING LOCATIONS. TYPICAL THIS ENTIRE ELEVATION.
2. MORTAR JOINTS HAVE "POPPED OUT" AT HORIZONTAL MASONRY THE LOCATIONS.
3. LIMESTONE COPING AND BAND AT TOP OF WALLS NEEDS REPOINTING AT ALL MORTAR JOINTS, TYPICAL THIS ENTIRE ELEVATION.
4. THE VERTICAL LIMESTONE SURROUND IS LEANING IN TOWARDS THE CENTER. THE JOINT BETWEEN BRICK AND LIMESTONE GETS WIDER TOWARDS THE TOP AND APPEARS TO BE AT LEAST 1" NEAR THE TOP.
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6. BRICK VENEER IS DISCOLORED AND EFFLORESCENCE IS TYPICAL BELOW LIMESTONE WINDOW SILLS. GENERAL CLEANING OF DISCOLORED BRICK VENEER IS NEEDED, TYPICAL FOR THIS ENTIRE ELEVATION.
7. CRACK IN LIMESTONE WINDOW SILL.
8. UNTIL OVER LIMESTONE SOLAR SCREENS IS CORRODED, CAUSING DAMAGE AND CRACKING TO LIMESTONE ELEMENTS AND BRICK.
9. CONCRETE CEILING SLAB AT ENTRANCE CANOPIES IS SPALLING, TYPICAL MOST LOCATIONS.
10. LADDER CRACKS IN BRICK VENEER.
11. COMM ADDITION IS IN GOOD CONDITION, BRICK VENEER, WINDOW SILLS AND STEEL UNTELS DO NOT REQUIRE ANY WORK EXCEPT CLEANING OF THE BRICK.
12. HATCHED AREA OF BRICK INDICATES EXTENT OF AREA WHERE BRICK IS TO BE PINNED, AS RECOMMENDED IN THIS REPORT. REFER TO RECOMMENDATION SECTION.

SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

BUILDING
CITY HALL AND
OLD POLICE BUILDING

PROJECT NO
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SCALE
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WALLER
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STRUCTURAL ENGINEERS

SHEET TITLE

PHOTO ELEVATIONS WITH OBSERVATIONS NOTED

Photo Narrative

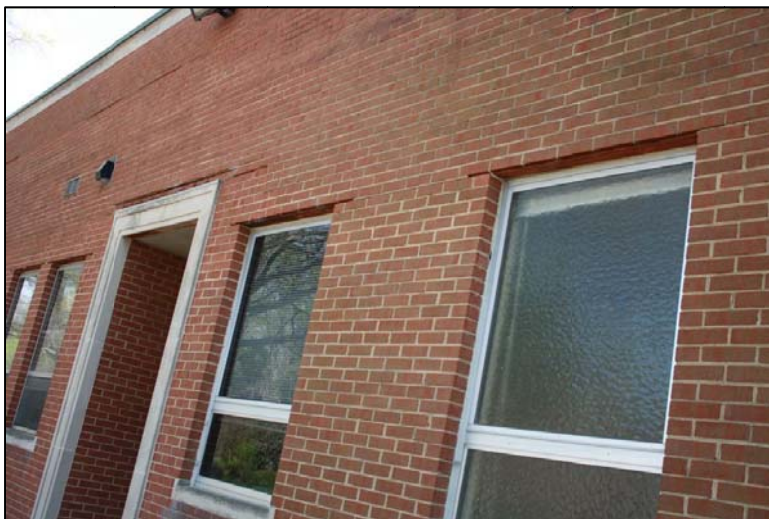
Exterior Conditions



2-6a. Mortar damage at horizontal reinforcing



2-6b. Mortar damage at horizontal reinforcing



2-6c. Damaged lintels and horizontal reinforcing

BRICK VENEER

The brick veneer is generally in poor condition along most of the exterior walls. Mortar and brick is deteriorated at lintels, mortar is popping out of joints at horizontal reinforcing locations, and ladder cracks are occurring in some corners. The main cause of the brick and mortar deterioration is moisture infiltration.

Initially the top of the exterior parapet walls consisted of a limestone coping which allowed water to absorb into the wall from the top and slowly migrate further down into the masonry. During a more recent roof renovation a metal coping was added, inhibiting further moisture from entering the wall through the top of the parapet.

Another factor leading to moisture damage of the brick veneer is the fact that there is no waterproofing on the CMU backup and no weepholes to release trapped moisture.

Over time, these moisture issues have caused the corrosion of the horizontal joint reinforcing and steel lintels, resulting in the mortar and brick deterioration.

It appears the exterior brick is leaning outward at the top of the wall along the West side of the Police building. However, it does not appear that this is the result of foundation settlement because the interior side of the eight-inch CMU wall appears to be plumb when tested with a four-foot level. It appears that the brick is possibly bowing out because it is inadequately tied to the wall.



2-6a. Damaged mortar at grill and horizontal joint reinforcing



2-6b. Building corner with ladder cracks



2-6c. Building corner with ladder cracks

BRICK VENEER (CONTINUED)

Cracks are occurring at several of the building corners as well as between masonry openings in a few locations. This is due to a combination of building differential settlement and lack of expansion joints. Caulk has been employed in some areas in an attempt to patch cracking joints at building corners.

There are some cracks in the exterior brick that would normally be diagnosed as settlement. An example of this is the crack on the southwest corner of the Police building. The crack stair-steps on one side of the corner in a manner that is consistent with settlement. However, there is no opposing stair-stepping crack on the other side of the corner or further down the wall. Also, when sighted down the mortar joints, they appear straight. Therefore, it appears that this cracking was caused by temperature movement and lack of vertical control joints.

There are no vertical control joints in the exterior brick veneer. These vertical control joints allow the brick veneer to expand and contract laterally without cracking. Vertical joints are usually located adjacent to window heads and the corners because these areas are the weakest part of the wall where it is most likely to crack.



2-2a. Typical window lintel with no weep holes and corroded steel angle



2-2b. Limestone window sill with spalled edge and cracked brick above



2-2c. Window lintel with corroding, non-galvanized steel angle

MASONRY OPENINGS

Excluding the addition on the southeast side of the Old Police Department Headquarters Building, all of the steel angles at window and door lintels are thoroughly corroded. Most of the steel angles have been in place since the original construction. The remaining lintels were installed during the 1975 addition except for the few opening at the 911 center that was constructed in the 90's. As was customary at the time of the construction, the ledger angles were primed but not galvanized. The lack of galvanizing limits the life expectancy of the steel brick lintels to forty to fifty years. The wall construction of the City Hall and the Old Police Building has contributed to the deterioration of the ledgers as well. The wall construction traps moisture behind the brick and does not provide a means for water to escape. The brick, which acts like a sponge, has been in direct contact with the steel and has hasten the corrosion and delamination of the bearing ends of the ledger. The ledger angles are in varying stages of deterioration.

The steel lintels that carry the bearing walls were not visible during the investigation. Thus, it was possible to conclusively determine the condition of these lintels. Experience with other projects indicates that the steel lintels concealed inside the CMU bearing walls usually out last the brick lintels by a considerable margin. Although not able to verify this with certainty, there was no evidence that these lintels have deteriorated.



2-3a. Limestone window trim with some hairline cracks in the lintel and sill



2-3b. Front entrance limestone surround of City Hall Building



2-3c. Cracked solar screen lintel

LIMESTONE VENEER ELEMENTS

Limestone trim elements around windows, as well as the square facing panels, are generally in satisfactory condition with the exception of some select areas that are damaged, typically at lintels.

The limestone surrounds at entrances are typically showing signs of separating from the CMU substrate. The separation appears to get worse toward the top of the surrounds.

The limestone surrounds at main entrance of the City Hall Building is exhibiting more separation from the other entrances due to the poor condition of the lintels at this location. This is addressed in more detail in the Building Entrances section of this photo narrative.

Virtually all the limestone is exhibiting some discoloration and the mortar joints have deteriorated.



2-4a. Metal and limestone coping



2-4b. Spalling limestone facing panel and limestone vertical



2-4c. Window lintel with corroding steel angle, damaged brick and limestone

LIMESTONE VENEER ELEMENTS (CONTINUED)

As previously stated, the limestone facing panels which are infilled between windows and at the two end entrances of the north side of the City Hall Building are typically in satisfactory condition, although nearly all of the mortar joints require tuck pointing. According to the construction drawings, these facing panels are held to the CMU backup with steel anchors. There are no apparent problems at the panels, but it is probable that these anchors are showing some signs of corrosion.

In one specific area, the limestone is significantly damaged or is separating from the supporting CMU building structure.

The limestone coping and belt course at the top of the roof parapet is exhibiting some cracking at a few building corners. However, in most cases the limestone is in satisfactory condition, but the mortar joints are extensively deteriorated.



2-5a. Limestone planter separating from building (northeast entrance)



2-5b. Damaged planter with joints separating (northeast entrance)



2-5c. Planter with damaged limestone (east entrance)

RAISED, LIMESTONE PLANTERS

There does not appear to be any excessive settlement issues at the east end of the building. However, there is up to 8-feet of fill under the slab at this end of the building. The observation at the Old Police building was that the deeper the fill the greater the settlement.

Despite the lack of any apparent settlement on the building itself, the raised, limestone planters located at the entrances on this end of the City Hall Building have experienced significant settlement as well as moisture damage, resulting in joint separation and general deterioration and discoloration of the limestone. Not only are the raised planters aesthetically unappealing, there is a potential safety hazard due to their poor condition.

The northeast entrance is located at, or just slightly above grade. The entrance was modified, at some point in time, in order to eliminate having to step up to the entrance.

The east entrance is raised three steps above the sidewalk. However there are no handrails.



2-6b. Efflorescence below limestone window sills and staining at condensation drain openings



2-7a. Excessive mold/mildew within entrance way

DISCOLORED BRICK & LIMESTONE VENEER

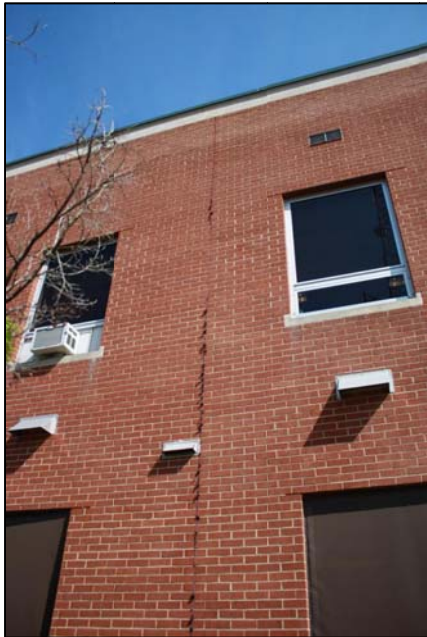
Discoloration of the brick veneer and limestone is prevalent on most of the exterior walls of the building, both at the City Hall and at the Old Police building. This discoloration is caused either by natural, long term weathering and age, or by efflorescence and moisture damage.

Efflorescence is apparent under most of the limestone sills throughout the exterior walls. Staining under the condensation lines and outside air grilles is also prevalent.

The west side of the building has the most extensive and advanced discoloration. The west entrance canopy of the Old Police Building, located adjacent to the City Hall Building, is exhibiting heavy, unsightly mold and mildew.



2-7b. Expansion joint at 2-story addition only extends along 2nd floor plane



2-7c. Brick expansion joint with oozing sealant

LACK OF CONTROL JOINTS

As stated previously, there are only a few control joints on the entire building and control joints are essential at openings and corners to prevent or control cracks caused by expansion and contraction. A building of this type, with such expansive lengths of bricks should have many control joints along the length of each wall. The lack of control joints has resulted in the many cracks occurring in the brick veneer along all of the building elevations.

There is a vertical expansion joint on the south side of the City Hall Building where excess caulk is being pressed out of the joint, creating an unsightly appearance and further showing the amount of expansion and contraction occurring without enough jointing to compensate for it.



2-6a. Front Entrance of the City Hall Building



2-6b. Diagonal crack extending between back entrance at stair and window



2-6c. Damaged lintel and joints at horizontal masonry reinforcing Wall is bowing along this area.

BUILDING ENTRANCES

Most of the building entrances are experiencing some type of adverse effect from the moisture and settlement problems.

At the front entrance of the City Hall Building, there are three lintels where the brick ledger was incorporated into the main bear wall lintel. These were designated as Lintels 5, 6 and 9 on the original construction drawings. L-9 is located directly above the two sets of double doors leading into the lobby. The L-6 Lintel forms the header over the three solar block panels on the left hand side of the entrance. Lastly, L-5 carried the limestone blocks and the outer bearing wall over the main entrance. The L-9 lintel appears to be satisfactory. However, L-5 and L-6 are in very poor condition and need to be repaired. Since these lintels are integral with the main wall supporting element, the repair is much more complicated. It is not possible to simply replace the brick ledger. The entire lintel must be replaced.

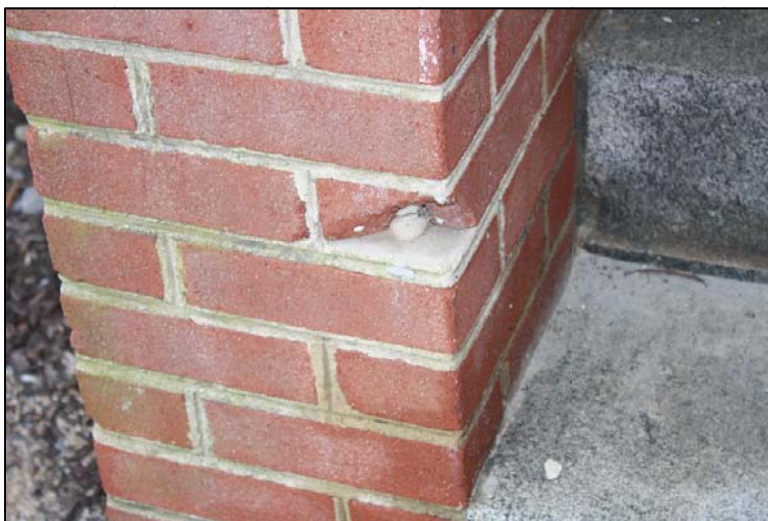
There is one unusual, diagonal crack at the back entrance adjacent to the stairway. Diagonal cracks normally indicate differential settlement. However, this crack goes from the windowsill and goes up and to the left rather than downward, which would be expected with differential settlement. This crack was most likely caused by the lack of adequate control joints in the brick veneer as opposed to the soil conditions.



2-6a. Entrance canopy with damaged joints at solar screen lintels



2-6b. Spalling and discolored concrete ceiling Poor lighting



2-6c. Damaged brick corner at entrance steps

BUILDING ENTRANCES (CONTINUED)

The entrance canopies on the Old Police Building are in poor condition overall. The concrete ceilings are spalling and discolored. Most of the deterioration can be attributed to the moisture infiltration problems occurring throughout the rest of the building. The lintels at the sidewall solar screens are significantly cracked and deteriorating. Additionally the lighting levels provided by the cast-in-place fixtures appear to be inadequate and the fixtures themselves are quite unsightly. Additionally there are no handrails at some of the entrances.



1. Main Entrance into City Hall Building



2. Covered entrance with ramps and automatic door openers, south side of City Hall Building



3. East entrance into Old Police Building with ramp

ADA DEFICIENCIES

There is no interior ADA compliant access between the Police building and the City Hall building, only a small set of steps in the corridor that links the two buildings. Therefore one must go outside in order to circulate between buildings.

The main, front entrance into the City Hall building, where the front reception desk is located, is not an ADA accessible entrance. One must go to the entrance that is east of the main entrance in order to enter in the front of the building and then proceed down the central corridor before encountering the reception desk.

The northeast entrance of the building has been modified, so that it is an ADA accessible entrance.

A covered, ADA accessible entrance has been added on to the south side of the building.

There is only one ADA compliant entrance into the Old Police building. A ramp was added on at the east entrance of the building.



2-6a. Corner of Window Lintel



2-6b. Horizontal Joint Reinforcing



2-6c. Depth of Brick and Collar Joint

WALL CONSTRUCTION INVESTIGATION

An investigation of the exterior wall construction was conducted at several small locations on both the City Hall Building Wing and Old Police Building. Bricks were removed selectively in order to expose the conditions within the wall.

What became immediately apparent, and backed up initial beliefs and the construction drawings, was that there was no waterproofing or dampproofing on the CMU. Additionally the space between the CMU wall and brick veneer was approximately $\frac{1}{2}$ " wide and clogged with mortar. Because there are no weepholes, it is not surprising that a sufficient amount of air space was not provided.

Photo Narrative

Interior Conditions



2-2a. Stair at Juncture of City Hall Building and Old Police Building



2-2b. Wall corner at bathroom

WALLS AND PARTITIONS

Differential settlement has been observed throughout the existing building. This settlement has caused extensive cracking in the CMU partition walls as well as dips in the slab on grade.

Based on field observations and the soil borings, it appears that the settlement was caused by the use of uncontrolled fill and poor compaction during the original construction. This condition is most pronounced at the area adjacent to the entry hallway on the North side of the Old Police building, the corridor adjacent to the elevator in the City Hall Building, and the first floor north offices of the City Hall Building.

The cracks in the interior CMU partition walls are a result of differential settlement under the slab on grade.



2-2a. Vertical wall crack



2-2a. Interior CMU partition separating from exterior CMU wall

WALLS AND PARTITIONS (CONTINUED)

The CMU walls and partitions in the Old Police Building are exhibiting many cracks due to the differential settlement being experienced by the building.

Extensive cracking has been observed in the CMU partition walls along the West side of the Old Police building. The pattern of the cracking first gave the impression that the exterior wall was rotating outward about the foundation. However, subsequent evaluations using a four-foot level indicated that the wall is relatively plumb. Based on test holes and other measurements, it appears that the opposite is occurring. The slab on grade bears on the exterior wall similarly to the condition around the basement and consolidation of the fill material has created a void here as well. The slab has cracked at some distance from the wall and the slab has tilted inward.



2-2a. Vertical wall crack adjacent to door



2-2a. Crack occurring below window sill corner

WALLS AND PARTITIONS (CONTINUED)

During the field investigation other areas around the perimeter of the Old Police building exhibited the same type of settlement and slab cracking as in the west entrance and northeast hall, although to a lesser degree. The conditions were more severe around the basement because there was far more uncontrolled fill to consolidate. However, differential settlement has occurred throughout the Old Police building. This is evidenced by cracks in the interior CMU partitions and noticeable peaks and valleys in the floor slab.

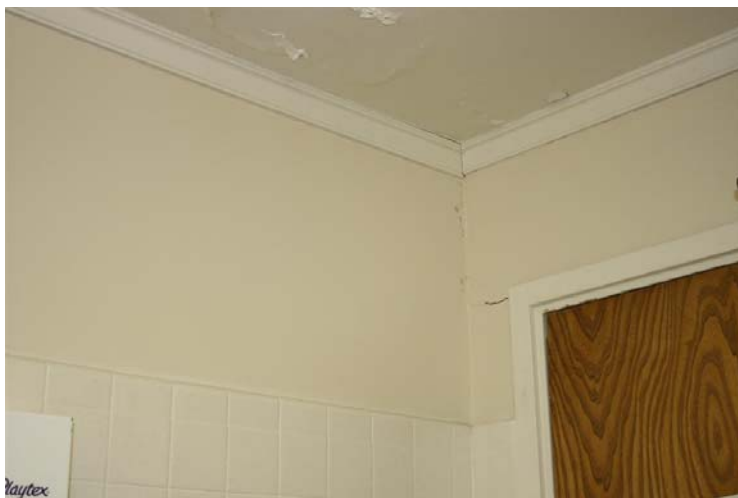
Due to the exposure of the CMU walls and partitions in the Old Police Building, it is much easier to observe the existence and prevalence of cracks occurring. However in the City Hall Building many of the departmental spaces have undergone recent office build-outs and remodeling, and wall coverings such as gypsum wall board, wood paneling, or wall paper are concealing potential damage to the CMU walls underneath.



2-2a. Horizontal wall crack between skewed doors.



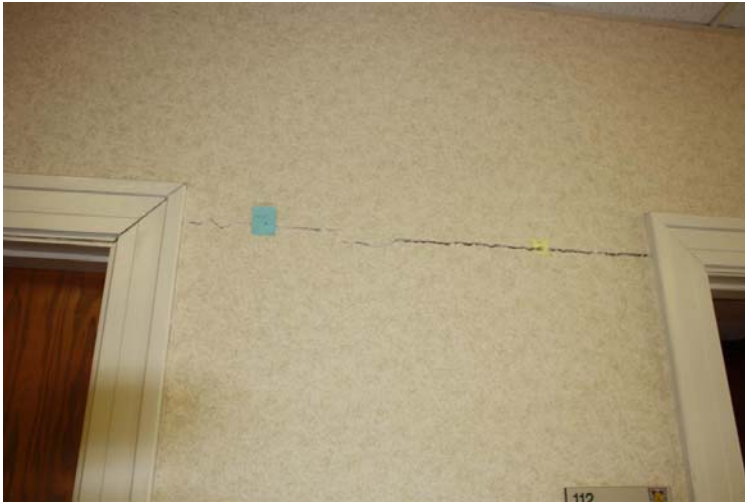
2-2b. Wall crack extending from skewed door to ceiling corner



2-2c. Wall crack extending from skewed door to ceiling corner

EFFECTS OF SETTLEMENT AT DOORS OPENINGS AND FLOORS

The slab-on-grade is constructed so that the exterior edge is supported on the perimeter foundation wall. This does not allow the slab to settle independently from the bearing wall structure. According to the original construction drawings, the building foundation is on virgin soil, while the slab-on-grade is constructed on two (2) to five (5) feet of fill. Based on the shallow borings recently taken, the soils used contained a fair amount of clays and was not optimum fill material. Also, there was most likely no control or testing of the compaction operations when the building was built. As the soil settles, voids are created under the slab where it is restrained. At some point, usually about 5-feet from the wall, the strain in the slab gets too great and causes the slab to fail in flexure. The result is a noticeable dip in the slab. These dips lead to the CMU partition walls pulling away from the exterior walls, creating gaps at the top. This also leads to misalignment of doorframes making it difficult to open and shut doors completely.



2-2a. Horizontal wall crack between skewed doors



2-3b. A half inch gap between the floor and partition



2-3c. Door casing separating at skewed door opening

EFFECTS OF SETTLEMENT AT DOORS OPENINGS AND FLOORS (CONTINUED)

Several doors are either inoperable or the doors themselves have been modified in order to operate in skewed door openings. This is most apparent in the bathrooms across from the elevator, and in the offices adjacent to the main (north) entrance of the City Hall Building.

The door openings in the first floor offices adjacent to the City Hall Building main entrance (north side) are severely skewed so severely that the doors are completely inoperable.

In recent years a crack has developed and widened, extending between the top corners of two of the skewed doors and developing gaps in the door casing. Additionally, a 1/2" gap has developed between the bottom of the partition and the floor due to the fact that the floor slab is settling.

According to information gathered from City employees who work in the building, the floor slab was stable for many years and the current observed movement has taken place over the last few years.



2-3a. Gap occurring between office floor and partition



2-3b. A half inch gap between the floor and partition at offices

EFFECTS OF SETTLEMENT AT DOOR OPENINGS AND FLOORS (CONTINUED)

A partition in the Revenue Offices has developed and widened, leaving a $\frac{1}{2}$ " gap the partition and the floor. Two doors in this wall are also inoperable.

However, it did not appear that there is any excessive settlement on the actual bearing walls or main building support system. The damage appears to be limited to the partition walls and non-load bearing elements that are supported on the slab-on-grade.

Additionally, there was no excessive settlement issues found at the east end of the City Hall building. However, there is up to 8-feet of fill under the slab at this end of the building. The observation at the Police building was that the deeper the fill the greater the settlement.



2-2a. Cracked terrazzo base



2-2b. Cracked terrazzo floor



2-2b. Crack occurring between terrazzo base and terrazzo floor

DAMAGED FINISHES

The corridor that runs along the northeast side of the Old Police Building and is closest to the City Hall Building is experiencing some clear and acute sloping due to differential settlement where there is a noticeable dip in the slab. Not only is the terrazzo flooring and terrazzo base cracking in this area, but doors have had to be modified in order to operate and CMU exterior walls and interior partition walls are exhibiting significant cracks.

The original construction drawings indicate that the five-inch thick slab on grade bears on the basement wall. Through the field observations it appears that the fill adjacent to the basement wall has consolidated causing the slab to bridge across the void to the nearest portion of unconsolidated fill. The distance the slab was spanning lengthened as the fill material continued to consolidate thus enlarging the void. It appears that the slab spanned across the void until it finally failed in bending and broke at mid span which is six to eight feet away from the basement wall and at the bearing end which is ten to twelve feet away. This created the severe dip that was observed in the hall way and adjacent rooms on the northeast side of the building.



2-3a. Women's Bathroom (southeast corner of City Hall Building)



2-3b. Womens' Bathroom

DAMAGED FINISHES (CONTINUED)

There is apparent damage to several finishes in many areas of the City Hall and Old Police Building. In some bathrooms there are areas of wall tile that are experiencing some significant cracking and tiled corners that are separating.

The bathrooms along the west side of the Old Police Building have wall tile cracks, separation at corners, and separation at the tile base. There is a bathroom / locker room that has been abandoned, the lockers and plumbing fixtures have been removed and capped off. However the tile finishes remain and have experienced the same cracking and separation.

The two sets of bathrooms in the City Hall Building located across from the elevator have damaged areas of tile as well as gypsum wall board finishes due to the significant settlement being experienced in this area.

The women's bathroom at the southeast corner of the City Hall Building has cracked wall tile, possibly caused by shrinkage in the CMU substrate.



2-2a. Cracked stone base at stair

DAMAGED FINISHES (CONTINUED)

Due to the differential settlement being experienced by the building, several areas of terrazzo flooring, terrazzo base, and terrazzo stairs are exhibiting cracks. In some locations the terrazzo, tile, or stone base is cracking due to differential settlement between the wall and the floor.



2-2b. Cracked terrazzo steps



2-2b. Cracked terrazzo at door sill



2-2b. Moisture damage in ceiling

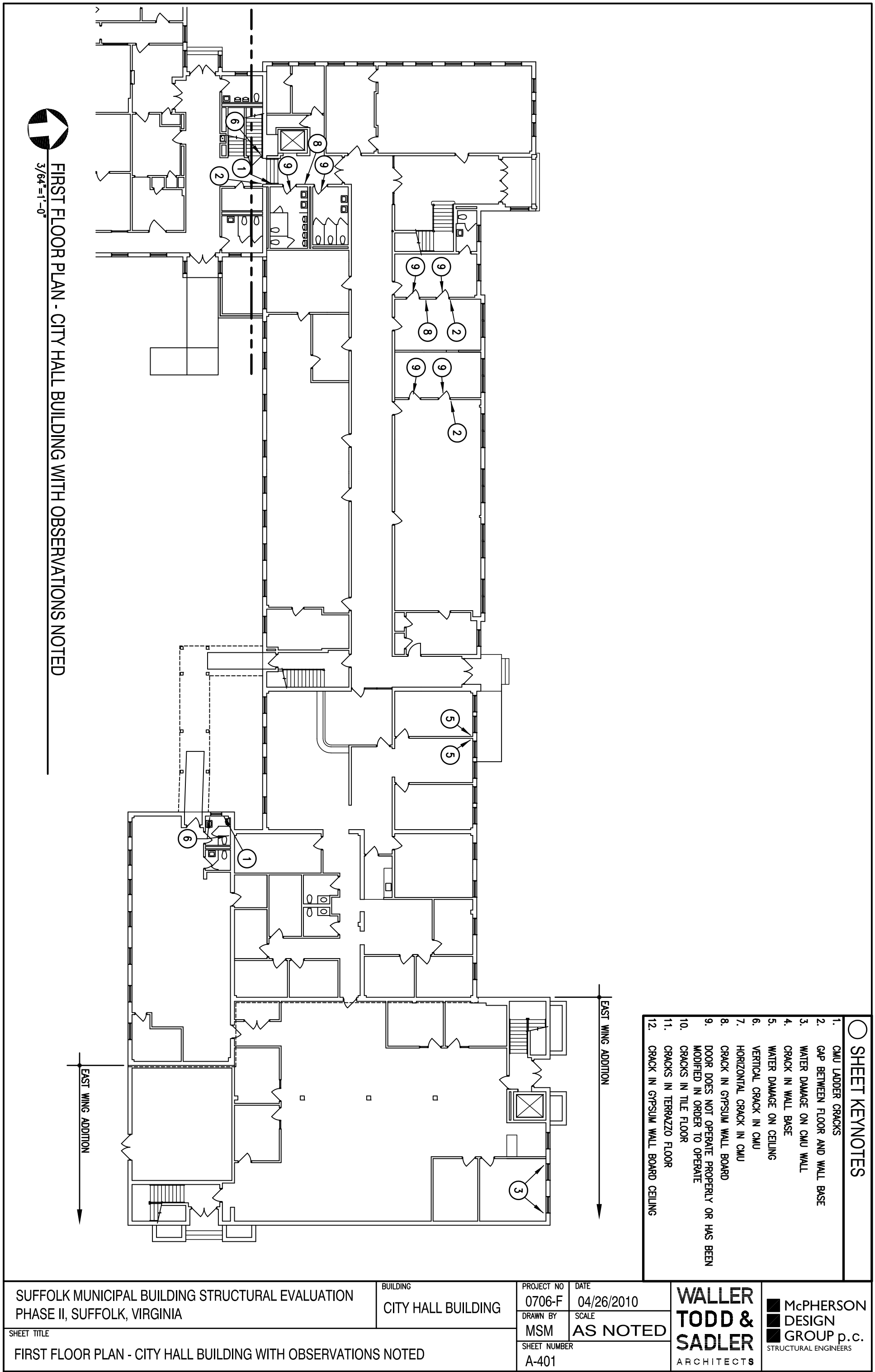


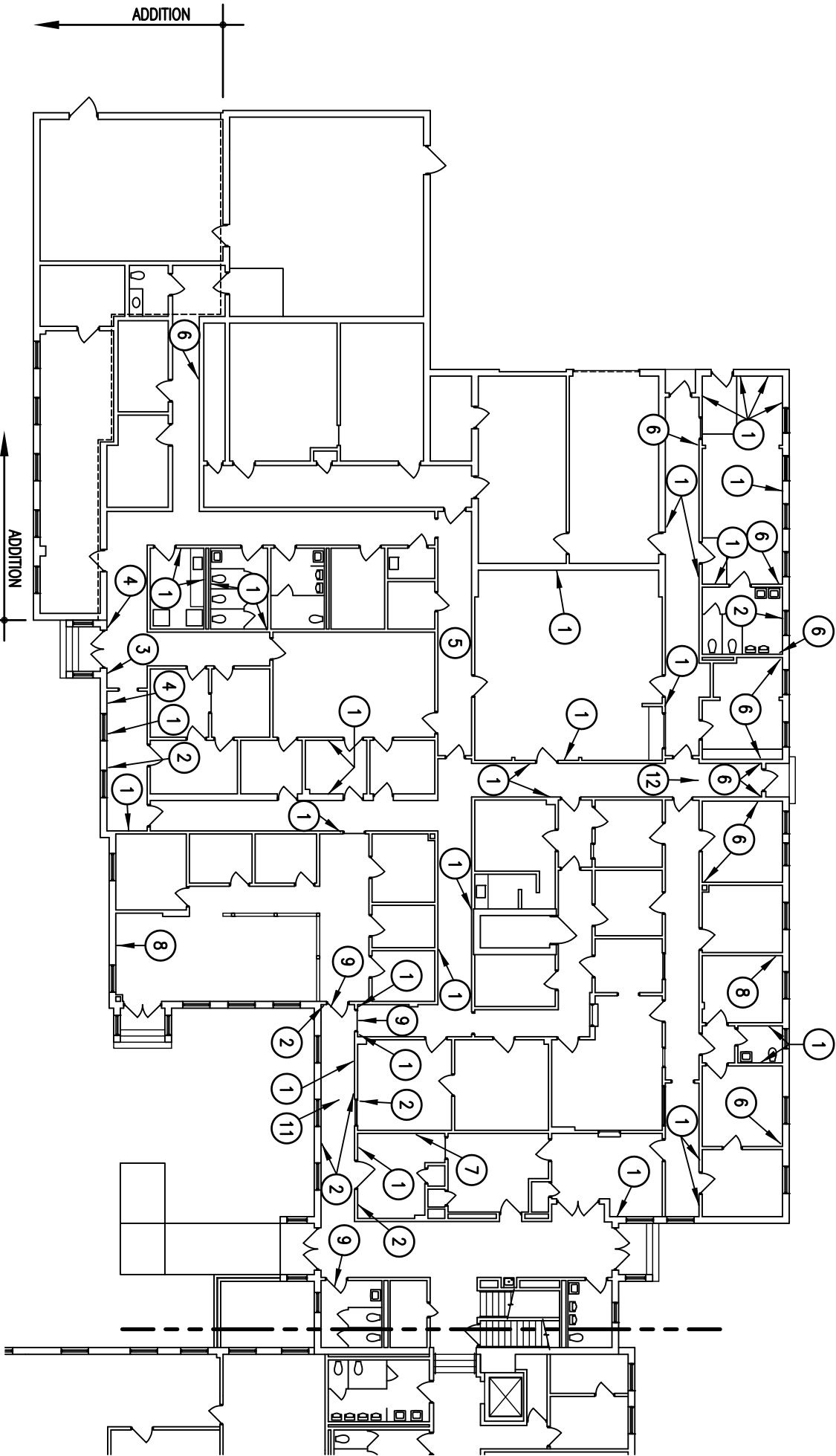
2-3a. Moisture damage at window jamb

MOISTURE DAMAGE

Throughout the Old Police Building there are a number of interior locations where moisture damage is apparent. It is difficult to determine whether this damage is a result of roof leaks or if it is a result of HVAC condensation forming on the equipment or ductwork and dripping on ceiling finishes.

Both in the City Hall Building and the Old Police Building, there are many areas where moisture damage is apparent around window openings. Wood casing is exhibiting deterioration and paint is peeling in some locations. In the City Hall Building, wall coverings have been replaced in recent renovations, concealing other potential interior moisture damage.





3/64"=1'-0"

FIRST FLOOR PLAN - OLD POLICE BUILDING WITH OBSERVATIONS NOTED

SHEET KEYNOTES

- 1. CMU LADDER CRACKS
- 2. GAP BETWEEN FLOOR AND WALL BASE
- 3. WATER DAMAGE ON CMU WALL
- 4. CRACK IN WALL BASE
- 5. WATER DAMAGE ON CEILING
- 6. VERTICAL CRACK IN CMU
- 7. HORIZONTAL CRACK IN CMU
- 8. CRACK IN GYPSUM WALL BOARD
- 9. DOOR DOES NOT OPERATE PROPERLY OR HAS BEEN MODIFIED IN ORDER TO OPERATE
- 10. CRACKS IN TILE FLOOR
- 11. CRACKS IN TERRAZZO FLOOR
- 12. CRACK IN GYPSUM WALL BOARD CEILING

SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

BUILDING
OLD POLICE BUILDING

PROJECT NO 0706-F	DATE 04/26/2010
DRAWN BY MSM	SCALE AS NOTED
SHEET NUMBER A-402	

WALLER
TODD &
SADLER
ARCHITECTS

McPHERSON
DESIGN
GROUP p.c.
STRUCTURAL ENGINEERS

SHEET TITLE

FIRST FLOOR PLAN - OLD POLICE BUILDING WITH OBSERVATIONS NOTED

LIST OF PHYSICAL DEFICIENCIES

EXTERIOR BUILDING DEFICIENCIES:

1. 100% of steel angle lintels are corroded and brick mortar joints are deteriorated at lintel bearing. *Exception: At Comm Room addition, brick veneer and brick lintels are in satisfactory condition.*
2. Brick veneer around courtyard (Between Old Police Building and City Hall Building) needs extensive repair and pointing.
3. Efflorescence below limestone window sills and general cleaning of discolored/molded brick veneer and limestone. *Exception: At Comm Room addition, general cleaning may not be necessary.*
4. Limestone coping and beltcourse units need to be pointed up extensively. Cracks in limestone units at some building corners.
5. Approximately 5% of limestone window frames have some moderate cracks, most typically near the first floor window lintels.
6. Approximately 5% of limestone window sills have some moderate cracks, most typically near the keyed ends.
7. Windows have no significant damage, but are not energy efficient windows.
8. Three entrance canopies have significant cracks along the lintels for the solar screen blocks. The concrete ceiling surface is spalling. Lighting is inadequate and unsightly.
9. Mortar is deteriorating along the roof parapet line and along horizontal brick-tie locations.
10. Along the west side of the building, brick veneer appears to be bowing slightly above the window and door lintels. Mortar is separating from bricks along the bed-joints where there are horizontal brick-ties.
11. Along the north side of the City Hall Building, five (5) of the vertical limestone window frames have some moderate cracks, most typically near the first floor window lintels.
12. Limestone "casing" at entrances is separating from wall structure.
13. Limestone planters have extensive damage and are separating from building.
14. Diagonal crack to the right of entry door (door under aluminum canopy).
15. Diagonal Cracks in mortar at top corners of wall in several locations.
16. At east side of City Hall Building, slight color mismatch between first and second floor brick veneer is apparent.
17. Window and door lintels are rusting, but corrosion is not as severe as in other locations.
18. Appears to be a slight bow in the brick along the 2nd floor lintel plane, most apparent at the limestone windows.
19. Limestone panel units at windows appear to be in good condition generally. Need to be pointed up and cleaned extensively.

INTERIOR BUILDING DEFICIENCIES:

1. Extensive cracks in CMU exterior walls and interior partitions.
2. The lack of a building separation joint is contributing to the cracks occurring at the juncture of the City Hall Building and the Old Police Building.
3. Along the western exterior wall of the Old Police Building, separation between the exterior CMU wall and the interior CMU partitions abutting it.
4. City Hall Building build-outs are concealing potential damage to the CMU walls underneath.
5. Several doors are inoperable or have been modified in order to operate in skewed door openings.
6. In recent years a crack has developed and widened between two of the skewed doors, and a ½" gap has developed between the bottom of the partition and the floor.
7. In some of the City Hall Building offices ½" gap has developed recently between the partition and the floor.
8. Some bathrooms have areas of floor and wall tile that are cracking and tiled corners that are separating.
9. Areas of terrazzo flooring, terrazzo base, and terrazzo stairs are exhibiting cracks.
10. A corridor has a sloping floor, cracking the walls, terrazzo flooring and base, and skewing door openings.
11. The ceilings of the Old Police Building are showing signs of moisture damage.
12. There are many areas where moisture damage is apparent around window openings and wood casing is deteriorating.

Recommendations

RECOMMENDATIONS

The following renovation recommendations are listed in 5, 10 and 25 year plans. These recommendations are intended to be accomplished in the immediate future in order to extend the life of the building for 5, 10, and 25 years respectively. These plans do not build upon one another. The intention is to select one renovation plan for the anticipated future use of the facility.

Note: Items listed in bold require immediate attention due to life safety concerns.

Renovation Plan – 5 Years of Building Use

1. **Shore up corroded steel lintels at identified windows (see plans).**
2. At all lintel bearing locations where mortar has popped out, install sealant to match the existing mortar.
3. **Shore up the two story limestone surround at main entrance of the City Hall Building and associated lintel above.**
4. Repairs to the steel lintels and limestone elements at solar screen locations (City Hall and Police Building entrances) are not recommended in the 5 year plan. We feel it would be cost prohibitive to make the required repairs.
5. **Pin brick veneer where it is bowing out at the Police Entrance, West Elevation. Replace steel lintel above entrance, remove limestone surround and replace with brick or stone surround.** **No additional brick repairs are recommended on either building, but A/E recommends Owner monitor brick veneer cracks and contact A&E if there are new cracks and if existing cracks become worse.*
6. Completely remove exterior planters on north and east side of the City Hall Building. At north entrance install mulch bed. At east entrance infill with concrete sidewalk, Owner to install freestanding site planters as desired. At east entrance provide stair railing. (WTS to review other entrances – do we need railings?)
7. Forego any significant foundation or under-slab repairs. ** A/E recommends Owner monitor slabs and contact A&E if cracking becomes worse or slab appear to be sloping.*
8. Fix locations where doors no longer close due to slab settlement (racked frames). This includes two CMU partition walls with three doors at the City Hall/Treasurer's offices (1st floor, north side). Demolish CMU partitions and replace with metal stud/GWB partitions. Repaint wall and ceiling surfaces in renovated rooms.
9. PME renovation to be evaluated in a subsequent study.

Renovation Plan – 10 Years of Building Use

1. Add veneer joints in exterior walls (thru brick only).
2. **Replace all corroded steel lintels at identified windows (see plans).**
3. Replace steel lintels at limestone solar screen locations and repair or replace damaged limestone elements. This includes the three at the main entrance of City Hall Building only. The ones at building entrances (located in brick walls at canopies) are to be demolished, see recommendation #4 below.

4. Demolish brick/limestone screen wall and concrete slab entrance canopies including concrete steps, landings and handrails (four locations). Replace with steel framed canopies, concrete steps and metal handrails that meet current codes.
5. **Pin brick veneer where it is bowing out at the Police Entrance, West Elevation. Replace steel lintel above entrance, remove limestone surround and replace with brick or stone surround.** ** No additional brick repairs are recommended on either building, but A/E recommends Owner monitor brick veneer cracks and contact A&E if there are new cracks and if existing cracks become worse.*
6. Tuck point all deteriorated mortar joints (brick and limestone) on the City Hall and Old Police Buildings.
7. Replace all windows and storefront with more energy efficient systems. (WTS to verify cost of replacement is cost effective for time frame.)
8. Remove limestone surrounds at exterior door entrances and reinstall with mechanical anchors.
9. At North and West elevations of the City Hall Building, remove limestone panels between first and second floor windows and the limestone surrounds. Replace steel lintels and reinstall limestone with mechanical anchors.
10. Completely remove exterior planters on north and east side of the City Hall Building. At north entrance install mulch bed. At east entrance infill with concrete sidewalk, Owner to install freestanding site planters as desired. At east entrance provide stair railing. (WTS to review other entrances – do we need railings?)
11. Use epoxy patch to repair small cracks in damaged limestone units (typically occurs at window sill locations).
12. Clean all discolored masonry - brick and limestone.
13. Forego any significant foundation or under-slab repairs. * A/E recommends Owner monitor slabs and contact A&E if cracking becomes worse or slab appear to be sloping.
14. Fix locations where doors no longer close due to slab settlement (racked frames). This includes two CMU partition walls with three doors at the City Hall/Treasurer's offices (1st floor, north side). Demolish CMU partitions and replace with metal stud/GWB partitions. Repaint wall and ceiling surfaces in renovated rooms.
15. Tuck point all ladder cracks in interior CMU walls.
16. Repair cracked gypsum wall board or plaster in areas noted as having cracks.
17. Replace damaged tile in bathrooms.
18. PME renovation to be evaluated in a subsequent study.

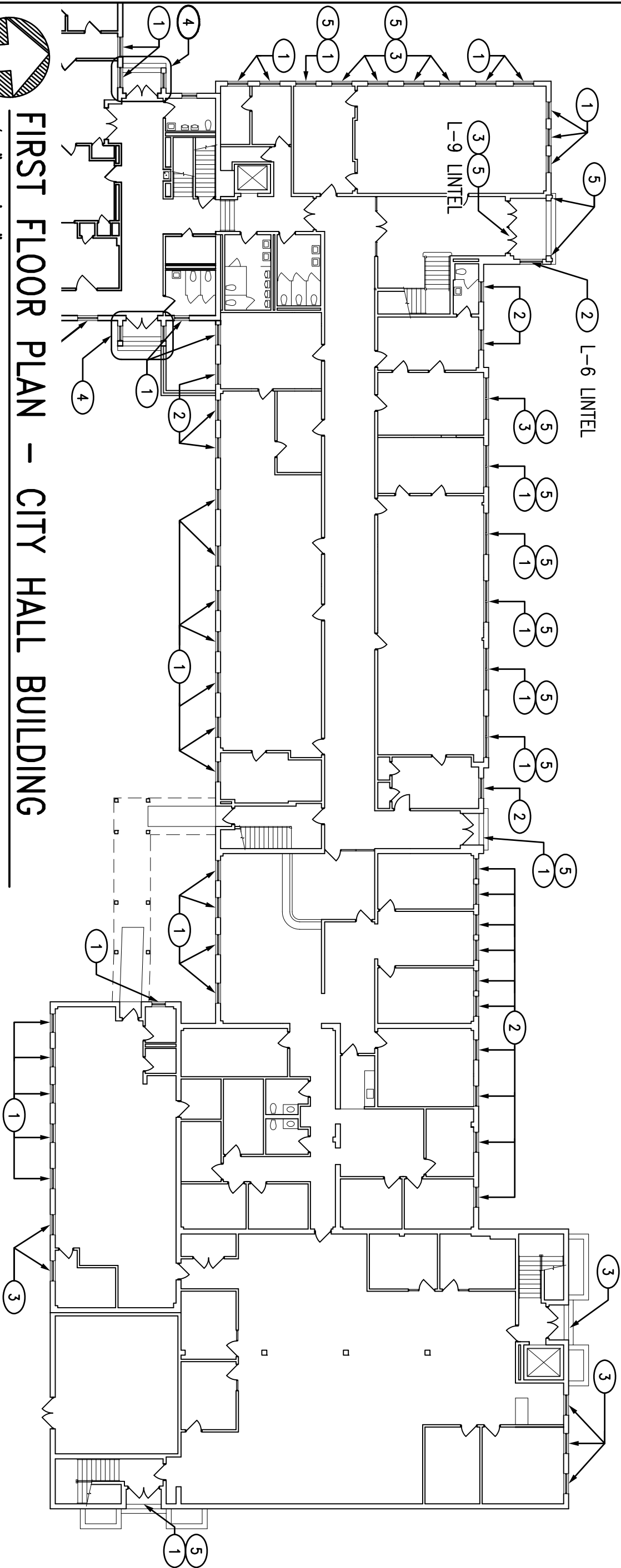
Renovation Plan – 25+ Years of Building Use

(May be cost prohibitive. Alternative may be complete building replacement)

1. Due to the corroded masonry reinforcing in the exterior wall and lack of weeps, remove all brick and limestone veneer, replace all steel lintels and rebuild the exterior wall to incorporate an air space with waterproofing on the CMU, insulation, weepholes, and control joints. This will increase the width of the exterior wall from the existing 12" wall (8" CMU and 4" brick) to a 14" wall (existing 8" CMU, 2" cavity with insulation, 4" brick).

2. Due to increased width of wall the following items will be required; replace top of wall coping, replace all limestone and vents in exterior walls, replace ramps and sidewalks that abut wall, modify handrails and modify steel framed entrance canopy at South entrance of City Hall Building.
3. Replace all windows, storefront and exterior doors with more energy efficient systems.
4. Completely remove exterior planters on north and east side of the City Hall Building. At north entrance install mulch bed. At east entrance infill with concrete sidewalk, Owner to install freestanding site planters as desired. At east entrance provide stair railing. (WTS to review other entrances – do we need railings?)
5. Demolish brick/limestone screen wall and concrete slab entrance canopies including concrete steps, landings and handrails (four locations). Replace with steel framed canopies, concrete steps and metal handrails that meet current codes.
6. Employ steel helical piles to significantly reduce or eliminate further slab settlement.
7. Gut and renovate the City Hall Building as required. This would entail almost a complete renovation of the first floor. Demolish interior non-load bearing CMU partitions and replace with metal stud and GWB partitions based on new occupancy. Replace ceilings and finishes as required. *Note: Owner to advise on layout.* Another option would be to only gut the first floor and leave second floor as is – Verify with Gerry.
8. Tuck point all ladder cracks in any remaining interior CMU walls.
9. PME renovation to be evaluated in a subsequent study.

** This plan will require the phased relocation of building occupants.*

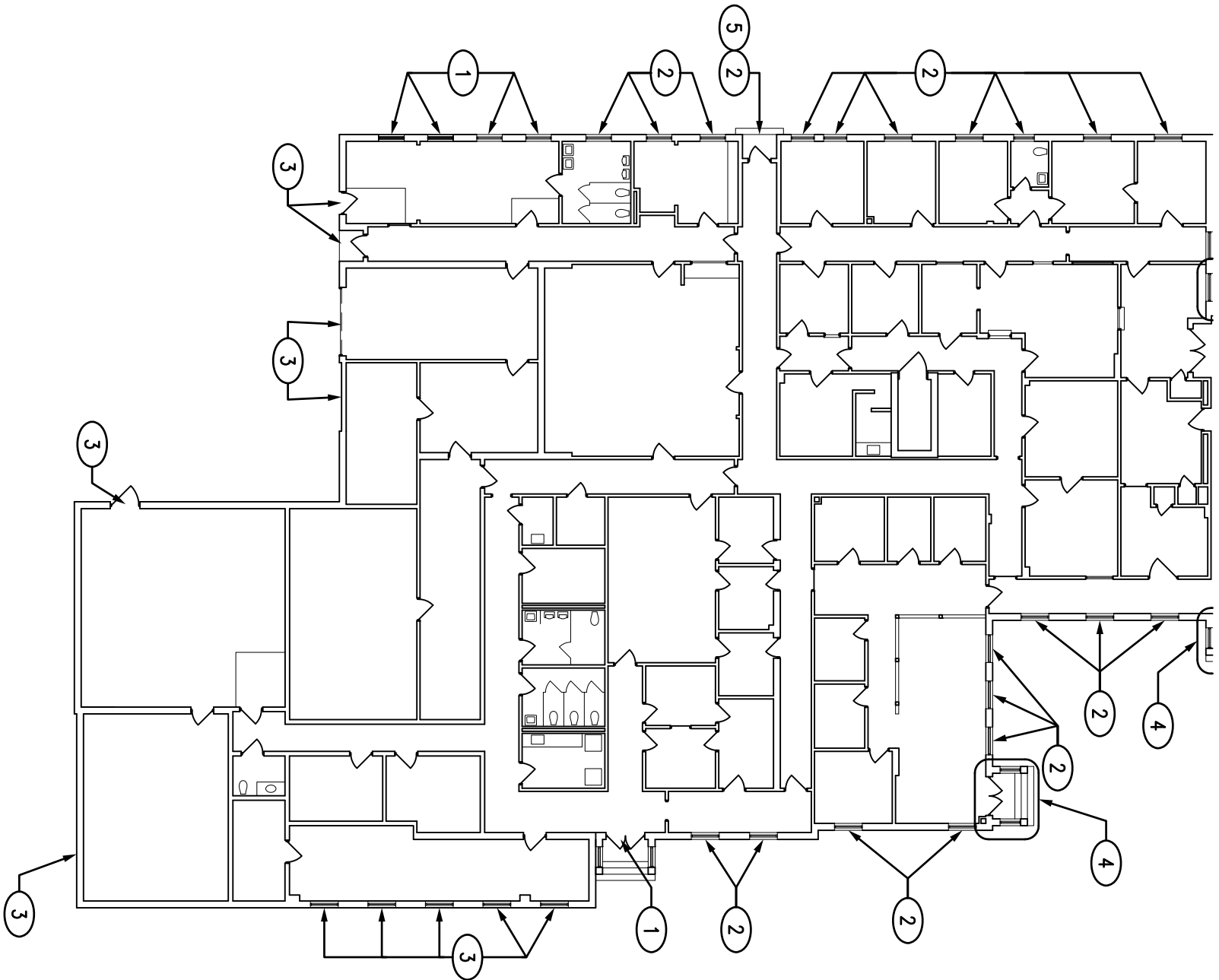


FIRST FLOOR PLAN – CITY HALL BUILDING

3/64" = 1'-0"

EVALUATION NOTES:

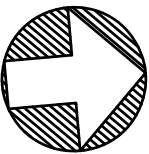
- 1 LEDGER ANGLES ARE IN A DETERIORATED CONDITION AND SHOULD BE REPLACED WITHIN THE NEXT FIVE TO 10 YEARS. THIS LINTEL REPLACEMENT WOULD BE INCLUDED IN THE 10 YEAR BUILDING USE RENOVATION PLAN.
- 2 LEDGER ANGLES ARE IN EXTREMELY POOR CONDITION AND SHOULD BE REPLACED OR SHORED IN PLACE WITHIN THE NEXT FIVE YEARS. SHORING THESE LINTELS WOULD BE INCLUDED IN THE 5 YEAR BUILDING USE RENOVATION PLAN. REPLACEMENT WOULD BE PART OF THE 10 YEAR BUILDING USE RENOVATION PLAN.
- 3 LEDGER ANGLES ARE IN SATISFACTORY CONDITION AND CAN REMAIN IN PLACE FOR THE FORESEEABLE FUTURE. THE CONDITION OF THE LINTELS SHOULD BE MONITORED YEARLY TO NOTE ANY FUTURE DETERIORATION.
- 4 REPLACE LINTELS OVER SOLAR BLOCK PANELS AND REPAIR BRICK PILLARS AT THE COVERED ENTRANCES. REPAIR ALL CONCRETE CRACKS AND SPAWLS IN THE CONCRETE SLAB. THIS REPAIR WOULD BE INCLUDED IN THE 5 YEAR BUILDING USE RENOVATION PLAN.
- 5 REMOVE EXISTING LIMESTONE PANELS AND RE-INSTALL WITH MECHANICAL FASTENERS TO THE EXISTING CMU SUB-STRAIGHT. THIS REPAIR WOULD BE INCLUDED IN THE 10 YEAR BUILDING USE RENOVATION PLAN.



EVALUATION NOTES:

- LEDGER ANGLES ARE IN A DETERIORATED CONDITION AND SHOULD BE REPLACED WITHIN THE NEXT FIVE TO 10 YEARS. THIS LINTEL REPLACEMENT WOULD BE INCLUDED IN THE 10 YEAR BUILDING USE RENOVATION PLAN.
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FIRST FLOOR PLAN – OLD POLICE BUILDING



3/64" = 1'-0"

SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

BUILDING
CITY HALL OR OLD
POLICE BUILDING

PROJECT NO

0706-F

DATE

4-21-10

DRAWN BY

MSM

SCALE

AS NOTED

SHEET NUMBER

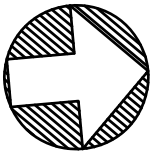
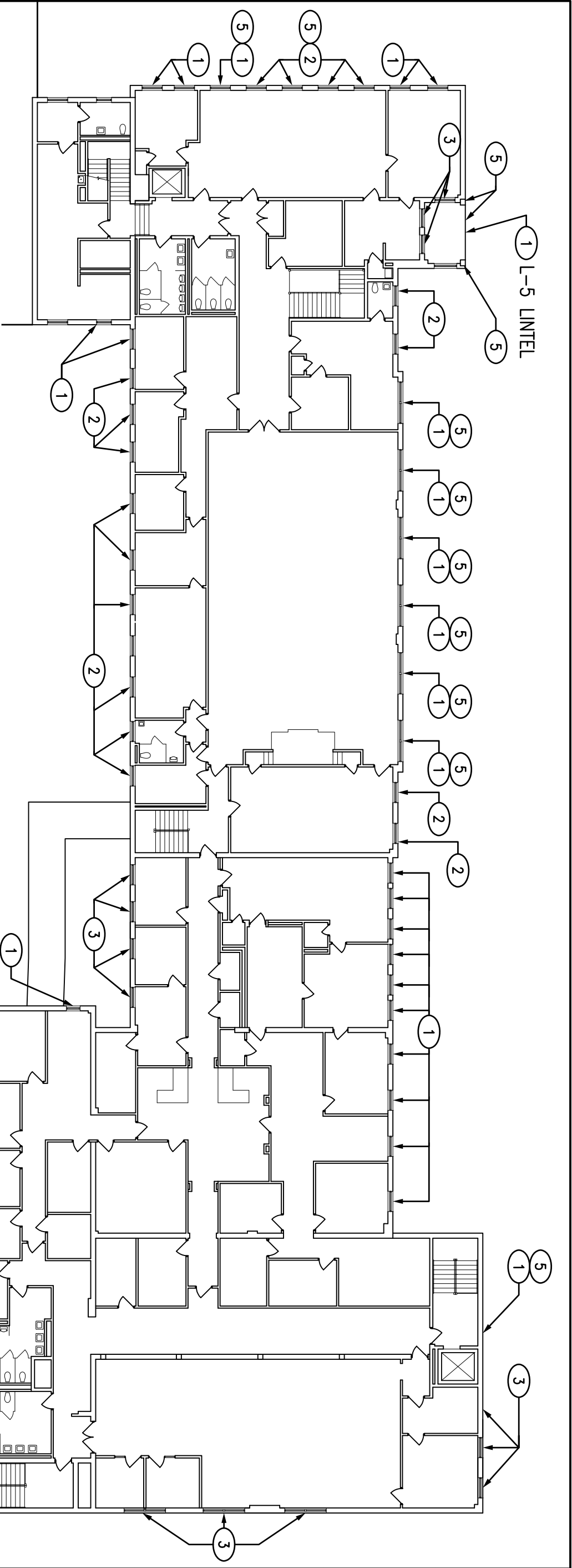
S-102

**WALLER
TODD &
SADLER**
ARCHITECTS

**McPHERSON
DESIGN
GROUP p.c.**
STRUCTURAL ENGINEERS

SHEET TITLE

FIRST FLOOR PLAN - OLD POLICE BUILDING



SECOND FLOOR PLAN – CITY HALL BUILDING

3/64" = 1'-0"

EVALUATION NOTES:

- 1 LEDGER ANGLES ARE IN A DETERIORATED CONDITION AND SHOULD BE REPLACED WITHIN THE NEXT FIVE TO 10 YEARS. THIS LINTEL REPLACEMENT WOULD BE INCLUDED IN THE 10 YEAR BUILDING USE RENOVATION PLAN.
- 2 LEDGER ANGLES ARE IN EXTREMELY POOR CONDITION AND SHOULD BE REPLACED OR SHORED IN PLACE WITHIN THE NEXT FIVE YEARS. SHORING THESE LINTELS WOULD BE INCLUDED IN THE 5 YEAR BUILDING USE RENOVATION PLAN. REPLACEMENT WOULD BE PART OF THE 10 YEAR BUILDING USE RENOVATION PLAN.
- 3 LEDGER ANGLES ARE IN SATISFACTORY CONDITION AND CAN REMAIN IN PLACE FOR THE FORESEEABLE FUTURE. THE CONDITION OF THE LINTELS SHOULD BE MONITORED YEARLY TO NOTE ANY FUTURE DETERIORATION.
- 4 REPLACE LINTELS OVER SOLAR BLOCK PANELS AND REPAIR BRICK PILLARS AT THE COVERED ENTRANCES. REPAIR ALL CONCRETE CRACKS AND SPAWLS IN THE CONCRETE SLAB. THIS REPAIR WOULD BE INCLUDED IN THE 5 YEAR BUILDING USE RENOVATION PLAN.
- 5 REMOVE EXISTING LIMESTONE PANELS AND RE-INSTALL WITH MECHANICAL FASTENERS TO THE EXISTING CMU SUB-STRAIGHT. THIS REPAIR WOULD BE INCLUDED IN THE 10 YEAR BUILDING USE RENOVATION PLAN.

SUFFOLK MUNICIPAL BUILDING STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

SHEET TITLE

SECOND FLOOR PLAN - CITY HALL BUILDING

BUILDING BUILDING
CITY HALL OR OLD
POLICE BUILDING

PROJECT NO

0706-F

DATE

4-21-10

DRAWN BY

MSM

SCALE

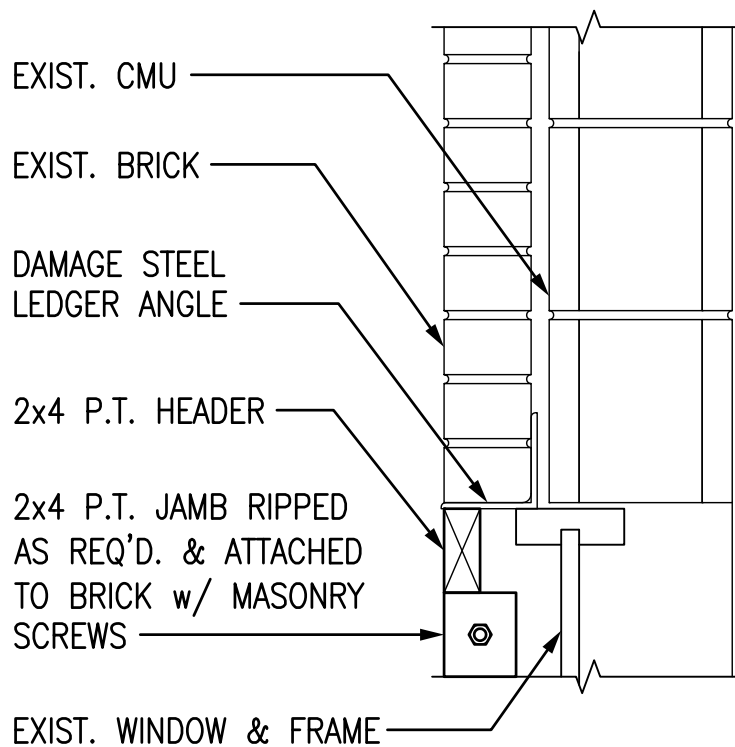
AS NOTED

SHEET NUMBER

S-103

**WALLER
TODD &
SADLER**
ARCHITECTS

 **McPHERSON
DESIGN
GROUP** p.c.
STRUCTURAL ENGINEERS



TYPICAL LEDGER ANGLE SHOWING DETAIL

1 1/2" = 1'-0"

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MUNICIPAL CENTER
STRUCTURAL EVALUATION
PHASE II, SUFFOLK, VIRGINIA

CITY HALL BUILDING
OR OLD POLICE
BUILDING

DATE ISSUED
4-21-10

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SBQ

SCALE
AS NOTED

SKETCH NUMBER
SKS-1

**WALLER
TODD &
SADLER**
ARCHITECTS

**McPHERSON
DESIGN
GROUP** p.c.
STRUCTURAL ENGINEERS

SKETCH TITLE TYPICAL DETAIL